European Cancer Moonshot Lund Center

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The Beau Biden Cancer Moonshot

- Accelerate progress in cancer, including prevention & screening
 - From cutting edge basic research to wider uptake of standard of care
- Encourage greater cooperation and collaboration
 - Within and between academia, government, and private sector
- Enhance data sharing



Blue Ribbon Panel recommendations (Oct '16); Implementation Working Groups established (Jan '17) <u>cancer.gov/brp</u>



Cancer Moonshot Program Biggest Cancer Initiative EVER.



7 Year Project Program (-2024) – \$1.8 Bill

International Cancer Proteogenome Consortium



✓13 countries
✓75 000 patients
✓15 cancer types





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Brazil – Partners to European Cancer Moonshot

* Rio de Janeiro





* 2PhD Students
* Senior Scientist
* Genomics Center Resource









Obama called on Vice President Biden to lead a new, national "<u>Moonshot</u>" initiative to eliminate Cancer as we know it









MultiPlexing Deep Mining
Quantitation of 15.000 proteins
180.000 Peptides

1.8-

Swedish National Medical MS Center – 9 years



Five Nobel Prizes have been awarded to Mass Spectrometry forms the Basis for Protein Sequencing..

Joseph John Thomson 1906 Nobel Prize for Physics "in recognition of the great merits of his theoretical and experimental investigations on the conduction of electricity by gases"	Francis William Aston 1922 Nobel Prize for Chemistry "for his discovery, by means of his mass spectrograph, of isotopes, in a large number of non-radioactive elements, and for his enunciation of the whole-number rule"	Wolfgang Paul 1989 Nobel Prize for Physics "for the development of the ion trap technique"	John Bennet Fenn 2002 Nobel Prize for Chemistry "for the development of soft desorption ionisation methods (ESI) for mass spectrometric analyses of biological macromolecules"	Koichi Tanaka 2002 Nobel Prize for Chemistry "for the development of soft desorption ionisation methods (MALDI) for mass spectrometric analyses of biological macromolecules"



M [M + nH]n+

M [M + H]+



Mass Spec Laboratories









Workflow Global Proteomics





Why drug distribution important?

Drug concentration?



concentration

Tumor heterogeneity?





HISTOLOGY & MS-IMAGING Identification Drugs in Pulmonay Function



Plots:

*Mask location (red) on H&E image showing bronchioles *Pearson's correlation index of individual m/z values *Pearson's correlation sorted according to Pearson's correlation. *Upper row: representative m/z distribution associated with the mask *Lower row: H&E image with m/z intensity contour of the mask (red) and other locations (blue)

Merging Histology & MS-Imaging Single Cell Resolution





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E Berta Kamprad Stiftelse

















Thank You for Your Attention....